

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 7810.118-304	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/US 03/23267	International filing date (day/month/year) 15.08.2003	Priority date (day/month/year) 16.08.2002
International Patent Classification (IPC) or both national classification and IPC C09C1/42		
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- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 05.03.2004	Date of completion of this report 08.11.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Nobis, B Telephone No. +49 89 2399-8140 

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International application No. **PCT/US 03/23267**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-19 as originally filed

Claims, Numbers

1-25 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-25
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-25
Industrial applicability (IA)	Yes: Claims	1-25
	No: Claims	

2. Citations and explanations

see separate sheet

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Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1) Reference is made to the following documents:

D1: WO 00/66510 A
D2: WO 00/32699 A
D3: US-B-6 402 8261

2) Novelty - Art. 33 (1) and (2) PCT

The pigment product of the present invention comprises kaolin having the following characteristics:

- at least 85 wt.% have e.s.d. $< 2 \mu\text{m}$
- 10 - 20 wt.% have e.s.d. $< 0.25 \mu\text{m}$
- shape factor 20 to 40
- particle steepness > 32
- kaolin is derived from crude secondary (sedimentary) kaolin

The subject-matter as defined in claims 1-25 is not disclosed in the prior art, therefore novelty is acknowledged for claims 1-25.

3) Inventive Step - Art. 33 (1) and (3) PCT

The technical problem underlying the present invention can be seen in providing a kaolin pigment product which is obtained from the cheaper and easier to process secondary kaolin which tends to have a higher proportion of fine particles, i.e. those having an esd smaller than $2 \mu\text{m}$. A second aspect of the invention concerns a process for these particles. This problem is overcome by the present invention by a kaolin product as defined in claim 1 of the application. This product is obtained by a method comprising combination of the secondary kaolin in form of an aqueous suspension with a coarse kaolin fraction which may have been subjected to an operation such as grinding or classification. The obtained suspension is subjected to attrition grinding in order to increase the shape factor of the kaolin particles.

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WO00/66510, the closest prior art, discloses in example 1 a pigment composition comprising kaolin having the following features:

- 93 wt.% have e.s.d. $< 2 \mu\text{m}$
- 21 wt.% have e.s.d. $< 0.25 \mu\text{m}$
- shape factor 16
- particle steepness 48
- kaolin is derived from secondary kaolin deposit from South East USA (p. 17 l. 14-17)

As set forth in the description, the kaolin particles of WO00/66510 generally have a steepness of >38 (p. 8 l. 7-11), a particle size distribution of at least 90 wt.% having $< 2 \mu\text{m}$ and no more than 25 wt.% having $< 0.25 \mu\text{m}$ (p. 14 l. 6-10) and a shape factor of less than 25 (p. 18 l. 11-13).

The pigment products of WO00/66510 and of the present application are very similar. It cannot be seen in which way a surprising technical effect, as would be required for the presence of an inventive step, could be achieved by the product as claimed in the application by simply varying the product parameter mentioned above in a very small range.

Claim 13 is drafted in terms of a "product-by-process" claim. In view of the provisions of Art. 64 (2) the EPO considers "product-by-process" claims to extend to the product per se. The product of claim 13 thus falls within the more general definition given in claim 1 of the application.

Therefore, an inventive step cannot be acknowledged for the subject-matter of claims 1 to 13.

Claims 14 to 19 disclose a process for particles having the product characteristics of claim 1. The object is, as stated above, to find a process which allows to use secondary kaolin as a starting product despite its higher proportion of fine particles. It is therefore regarded as obvious to a person skilled in the art to combine said secondary kaolin with a coarse kaolin fraction as obtained e.g. by a classification operation. Secondary kaolin has a lower quantity of ultrafine platy particles than primary kaolin; it has a more blocky nature of the particles which require a process differing from the processes for primary particles in order to delaminate the blocky agglomerates. As disclosed in WO0032699 (p. 2 paragraph 4) attrition milling is a generally known operation to delaminate kaolin stacks in an aqueous clay slurry.

The process as claimed in the present application is regarded as a mere combination of process features which are either obvious to the skilled person in view of the problem to be

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solved or have already been disclosed in the prior art. It cannot be seen in which way said combination would lead to a surprising technical effect, as is required for the presence of an inventive step. Therefore, an inventive step cannot be acknowledged for the subject-matter of claims 14 to 19.

Claims 20-25 concern the coating of paper sheets for producing gloss coatings. However, they do relate only to features as are generally known in the art, see e.g. D1 (WO00/66510). Therefore, an inventive step cannot be acknowledged for the subject-matter of claims 20 to 25.